Safford Regional Airport Master Plan Update 2000

Safford, Arizona

Facility Requirements

Chapter 4 Facility Requirements

4.1 INTRODUCTION

This chapter summarizes the results of the facility requirements master planning task for the various airport components under two major categories: 1) airside and 2) landside.

The facility requirements task serves to:

- determine whether the existing airside and landside facilities at Safford Regional Airport can accommodate the forecast demand levels presented in the previous chapter and quantify the shortfalls;
- translate the capacity shortfalls into specific airport development needs through the planning year 2020; and
- define other requirements relating to meeting FAA airport design standards and remedying facilities in poor condition.

While this master plan chapter's primary objective is to address airport needs through the year 2020, additional discussion is presented regarding possible facility needs beyond that timeframe.

4.2 AIRSIDE FACILITIES

Airside facility requirements presented in this section include: runways; taxiways; aircraft apron; helicopter facilities; airfield pavement; navigation aids; visual aids; marking; signage; and airspace. A brief summary of airside facility requirements for Safford Regional Airport is presented here with a detailed discussion following.

- For the master planning window, Runway 12-30 is defined as a B-II runway serving large (greater than 12,500 lbs.) aircraft and Runway 8-26 is defined as a B-II runway serving small (less than 12,500 lbs.) aircraft (approach category B is an aircraft with an approach speed of 91 knots or more but less than 121 knots; design group II is an aircraft with a wingspan from 49 feet up to but not including 79 feet).

- For the 50-year airport outlook (beyond the master planning window), Runway 12-30 is defined as a C-II runway (approach category C is an aircraft with an approach speed of 121 knots or more but less than 141 knots; design group II is an aircraft with a wingspan from 49 feet up to but not including 79 feet) serving large aircraft.
- Airfield operational capacity is more than adequate to accommodate demand throughout the planning period (2020) and beyond.
- Wind data available reveals that each individual runway has more than 95 percent wind coverage.
- Runway dimensions (length and width) are adequate to accommodate projected aviation demand throughout the planning period and beyond. The gradient for both runways also meets FAA standards.
- Runway 8-26 object free area (OFA) is not within airport control (inside airport boundary) as required by current FAA design standards. The runway protection zones (RPZs) for Runway 12-30 are only partially controlled with avigation easements. Additional easements (or fee simple purchases) are required.
- Minimum parallel and connecting taxiway dimensions and separations are adequate. However, Taxiway D should be relocated to align with Taxiway C and a new Taxiway E should be constructed to serve future hangar development needs.
- Aircraft parking apron area is adequate to meet projected aviation demand through the planning period.
- Helicopter parking is nonexistent. A total of 12 helicopter parking spaces are needed during the planning period.
- All airfield pavement strengths are adequate to accommodate projected aircraft fleet mix through 2020. Beyond 2020, the terminal apron should accommodate an area for 30,000 lbs. single wheel loading (SWL) aircraft up from the current strength of 15,000 lbs. SWL
- Airfield signage needs to be replaced/upgraded. Existing signage is antiquated and not up to current FAA standards.
- The current airfield lighting system is outdated and should be upgraded from direct-buried to conduit.
- Runway 12-30's VASI system and Runway 8-26's PAPI system should be replaced with new PAPI systems.
- Utility improvements are needed to serve existing and forecast demand to include fire protection.

4.2.1 Runways

Runway Demand/Capacity Analysis

The capacity of the runway system to accommodate existing and forecast demand is determined by three statistical measurements. Standard techniques for producing these measurements are derived from FAA Airport Capacity and Delay (Advisory Circular 150/5060-5) to include:

- Annual Service Volume (ASV): The number of annual aircraft operations that can be accommodated on a runway system under a full range of airport operating conditions that would be encountered over a year's time.
- Hourly Capacity: The maximum number of aircraft operations that can occur on a runway system in a particular hour under two operating scenarios -- visual flight conditions and instrument flight conditions.
- Aircraft Delay: The average amount of time aircraft will be delayed as a result of a demand/capacity deficit, expressed in minutes per operation or annual hours.

According to the 1995 State Aviation Needs Study (SANS), the existing ASV for Safford Regional is estimated at 286,700 operations. In comparison, FAA's Airport Capacity and Delay Advisory Circular 150/5060-5, reflects an estimated ASV of 200,000 operations for an airport configuration similar to Safford. This capacity analysis used the lower ASV of 200,000.

Table 4-1 presents a comparison between ASV and forecast demand at Safford. As shown, the runway system capacity is well above the demand projected throughout the planning period.

Table 4-1
Forecast Demand vs. Annual Service Volume (ASV)

Year	Operations Demand Forecast	ASV	Demand as % of ASV
1997	14,100	200,000	7.1
2005	16,900	200,000	8.5
2010	18,000	200,000	9.0
2020	19,700	200,000	9.9

Note: ASV is based on existing airfield configuration. For comparison, 1995 State Aviation Needs Study (SANS) reflects an estimated ASV of 286,700.
Sources: FAA Airport Capacity and Delay (Advisory Circular 150/5060-5), and Stantec Forecasts.

Table 4-2 presents the estimated hourly capacity and peak hour demand under VFR and IFR conditions. This comparison reveals that hourly capacity is more than adequate during the planning period. Therefore, airfield delay is not an issue for Safford.

Table 4-2
Hourly Demand / Capacity Analysis

	Peak Hour Operations **Demand**		Average Hourly **Capacity**		Peak Demand as Percent of Hourly Capacity	
Year	VFR	IFR	VFR	IFR	VFR	IFR
1997	7	5	77	57	9.1 %	8.8 %
2005	8	6	77	57	10.4 %	10.5 %
2010	9	6	77	57	11.7 %	10.5 %
2020	10	7	77	57	13.0 %	12.3 %

Note: IFR Demand is estimated at 70 percent of VFR demand. This assumes that approximately half of all single engine operations demand will not happen during IFR conditions.
Source: FAA Airport Capacity and Delay (Advisory Circular 150/5060-5) and Stantec Forecast.

Runway Dimensions

In addition to runway capacity and delay measurements, it is important to determine whether the runway dimensions (length, width) are adequate to serve the type of aircraft operating at Safford. To accomplish this, the airport's classification and service role within the region must be identified first. In developing the airport's classification and facility requirements, the two criteria to be considered are:

- Determination of Aircraft Approach Category: This identifies the operational characteristics (approach speed) of the aircraft. This information is derived for the most demanding aircraft (highest approach speed) that will operate at the airport.
- Determination of the Airplane Design Group: This identifies the physical characteristics (wingspan) of the aircraft. This information should be derived from the most demanding aircraft (largest wingspan) that will operate at the airport on a regular basis (typically more than 500 annual operations).

Based on a review of the aircraft that are projected to operate at Safford, the Aircraft Approach Category is B and the Airplane Design Group is II. This combination, B-II, forms the FAA alphanumeric Airport Reference Code (ARC) for Safford. **Table 4-3** specifically defines the criteria associated with each approach category and design group.

Table 4-3
Aircraft Approach Categories and Design Groups

Aircraft Approach Categories		Aircraft Design Groups	
Category	Approach Speed	Group	Wingspans
A	Less than 91 knots	I	up to but not including 49 feet
B	91 knots or more but less than 121 knots	II	49 feet up to but not including 79 feet
C	121 knots or more but less than 141 knots	III	79 feet up to but not including 118 feet
D	141 knots or more but less than 166 knots	IV	118 feet up to but not including 171 feet
E	166 knots or more	V	171 feet up to but not including 197 feet
		VI	197 feet up to but not including 262 feet

Source: FAA AC 150/5300-13, Airport Design

Some typical airport reference codes derived from these characteristics are:

A-I Single Engine Aircraft (i.e. Cessna 182)
B-II Multi-Engine and Small Jet Aircraft (i.e. Beech 1900, King Air, Cessna Citation)
C-II Larger Multi-Engine and Corporate Jet Aircraft (i.e. Gulfstream III, Sabre 80)
C-III Medium-Sized Air Carrier Aircraft (i.e. Boeing 737, 727, DC-9)
D-IV Larger Air Carrier Aircraft (i.e. Boeing 707, Lockheed 1011)
D-V All Larger Air Carrier Aircraft (i.e. Boeing 747, B-52)

It is important to note that while the airport is currently experiencing Approach Category C operations (i.e. jet traffic), activity levels are not projected to reach 500 annual operations (activity level for critical aircraft designation) by the year 2020. However, long-term projections (20- to 50-year outlook) of aviation traffic (Approach Category C) should be considered when developing the airport to ensure that development does not preclude accommodating larger/faster aircraft.

While an ARC can represent the most demanding aircraft operating regularly (500 annual operations or more) at the Airport, aircraft with less demanding characteristics may use a secondary runway (e.g. crosswind). Although both runways are designated as B-II, primary Runway 12-30 is defined as serving both small and large aircraft (greater than 12,500 lbs.) and crosswind Runway 8-26 is defined as serving primarily small aircraft.

Since the airport is serving some C-II traffic now and it is anticipated that this activity will grow beyond the 20-year planning period to levels requiring that the design standards be upgraded from B-II to C-II after 2020, these differences are provided for comparison in **Table 4-4**. Definitions of key terms presented in Table 4-4 follows.

Table 4-4
Design Standards

Aircraft Type Served:	B-II		C-II	
Visibility Minimums:	Visual and not lower than ¾-mile	Lower than ¾-mile	Visual and not lower than ¾-mile	Lower than ¾-mile
Runway width	75	100	100	100
Runway Safety Area width	150	300	500	
Runway Safety Area length[1]	300	600	1,000	
Runway Object Free Area width	500	800	800	
Runway Object Free Area length[1]	300	600	1,000	
Runway to Taxiway separation	240	300	300	400
Runway to Parking Area Separation	250	400	400	500
Runway Protection Zone dimensions	1,000x250x450[2] 1,000x500x700[3] 1,700x1,000x1,510[4]	2,500x1,000x1,750	1,700x500x1,010[3] 1,700x1,000x1,510[4]	2,500x1,000 x1,750

[1]Beyond runway end. [2]Serving small aircraft. [3]Visual and *not lower than 1 mile.* [4]*Not lower than ¾-mile*
Note: All dimensions shown in feet.
Source: FAA AC 150/5300-13

Visibility Minimums: Visibility required before executing an approach to the designated runway. For Safford, Runway 12-30 has a new GPS approach (published in October 1998) with visibility minimums of one mile. For planning purposes, Safford is projected (beyond 2020) to have an instrument approach to Runway 12-30 for C-II aircraft with visibility minimums as low as ¾-mile.

Runway Safety Area (RSA): The purpose of the RSA is to enhance the safety of aircraft which overshoot, undershoot, or veer off the runway and to provide greater accessibility for firefighting and rescue equipment during such incidents. The RSA is an area (cleared and graded) centered about the runway centerline for the full length of the runway plus an extended distance off each runway end. The width and length off each

runway end is a function of the type of aircraft and approach visibility minimums associated with the runway.

Runway Object Free Area: The purpose of the OFA is to maintain a clear area (beyond that required by the RSA) surrounding the runway. The OFA does not have a grading requirement like the RSA, but no object can protrude above ground level within its boundary. The OFA is an area centered about the runway centerline for the full length of the runway plus an extended distance off each runway end. The width and length off each runway end is a function of the type of aircraft and approach visibility minimums associated with the runway.

Runway Protection Zone (RPZ): The function of the RPZ is to enhance the protection of people and property on the ground. The RPZ is an area (trapezoidal in shape) centered about the extended runway centerline and beginning 200 feet from the runway end. The size of the RPZ is a function of the type of aircraft and approach visibility minimums associated with the runway end. FAA desires that all objects are clear of the RPZ, but some uses (under certain conditions) are permitted. See Chapter 5 for an illustration of the RPZ located off each runway end at Safford.

Runway dimensions (length and width) were reviewed with respect to the B-II and C-II aircraft forecast to operate at Safford. The FAA Airport Design Model was used in the runway length analysis. Results for Safford are reflected in **Table 4-5**.

As shown, primary Runway 12-30 at an actual length of 6,000 feet falls within the category of "large airplanes of less than 60,000 lbs. at 60% useful load." This length is adequate to accommodate the fleet mix forecast to operate at Safford (through 2020) which will typically include small aircraft as well as large aircraft up to 15,000 lbs. Beyond 2020, aircraft up to 30,000 lbs. SWL are forecast to operate at Safford. Crosswind Runway 8-26, at an actual length of 4,800 feet, is adequate as it will serve 95% of the small aircraft fleet.

Table 4-5
FAA Computer Model - Runway Length Requirements for Safford

AIRPORT AND RUNWAY DATA

Airport elevation ..... 3176 feet
Mean daily maximum temperature of the hottest month ..... 99.70 F.
Maximum difference in runway centerline elevation ..... 4 feet
Length of haul for airplanes of more than 60,000 pounds ..... 500 miles
Dry Runways

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots ..... 400 feet
Small airplanes with approach speeds of less than 50 knots ..... 1050 feet
Small airplanes with less than 10 passenger seats
75 percent of these small airplanes ..... 3810 feet
95 percent of these small airplanes ..... 4750 feet
100 percent of these small airplanes ..... 5200 feet
Small airplanes with 10 or more passenger seats ..... 5210 feet

Large airplanes of 60,000 pounds or less
75 percent of these large airplanes at 60 percent useful load .... 6000 feet
75 percent of these large airplanes at 90 percent useful load ..... 8640 feet
100 percent of these large airplanes at 60 percent useful load ..... 8250 feet
100 percent of these large airplanes at 90 percent useful load ..... 10,660 feet

Airplanes of more than 60,000 pounds ..... Approximately 6,130 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design, no Changes included.

Note: ***Bold italicized data*** represents key lengths for runways at Safford. The 4-foot difference in runway end elevation is based on Runway 12-30.
Source: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design

Runway width is also adequate for both runways during the master planning period as shown here:

	Required Width	Existing Width
Runway 12-30	75 feet*	100 feet
Runway 8-26	75 feet	75 feet

* Required width for B-II aircraft (design aircraft for Safford through 2020) is 75 feet. C-II aircraft (ultimate design aircraft for Safford) require 100 feet.

Runway Gradient

Runway 12-30 has a 0.1 percent gradient and Runway 8-26 has a 0.4 percent gradient. The gradient for both runways meets FAA standards.

Wind Coverage

As described in Chapter 2, Inventory, both Runways 12-30 and 8-26 have an individual wind coverage greater than the FAA threshold of 95 percent. This threshold is used to help determine the need for a crosswind runway in cases where one is non-existent. For other airports, like Safford, it may be a factor in determining to what extent an existing crosswind should be maintained. According to airport staff, the crosswind runway plays an important part in supporting airport operations regardless of the fact that each runway provides over 99 percent wind coverage. However, the wind data used is only half of the 10-year data compilation recommended. Therefore, the existing crosswind runway should continue to be maintained until a more comprehensive set of data can be compiled from the ASOS installed in 1997. Refer to the airport layout plan (ALP) in Chapter 8 for a summary and illustration of the current windrose data.

Runway Facility Requirements

Primary Runway 12-30 and crosswind Runway 8-26 are both considered adequate in length and width to meet projected demand through 2020. However, Runway 8-26's object free area (OFA) is not completely contained within airport property as required by FAA guidelines. Approximately 50 feet off Runway 8 end and approximately 150 feet off Runway 26 end are outside the airport boundary. These areas should be controlled by the airport and, therefore, acquired in fee simple. Further, the City's desire to prevent encroachment and incompatible development from occurring around the airport as well as their plans to extend Runway 8-26 (beyond the master planning window) will require the acquisition of additional property along the westerly and southerly boundaries of the airport. It is recommended that the City purchase this additional property as soon as feasible. See Chapter 5, Sections 5.3.3 and 5.4 for additional details.

4.2.2 Taxiways

Safford Regional Airport has parallel taxiways for both runways. Taxiways A, B, and C are approximately 240 feet from runway centerline (Note: Electronic files indicate that these separations vary slightly from 233 to 240 feet). The 240-foot separation meets the requirement for existing and forecast operations at the airport through 2020. However, Taxiway D is located more than 450 feet from centerline and is, thus, not aligned with Taxiway C at the opposite end of the runway. It is recommended that Taxiway D be relocated to align with its parallel counterpart to improve aircraft taxiing flow patterns and ultimately accommodate apron expansion where Taxiway D is located now.

In addition, a new parallel Taxiway E is recommended to replace the taxiway previously abandoned to the east of the terminal area. This new taxiway, in conjunction with associated taxilanes, is recommended to support the additional hangar development needs describer later.

There are six connecting taxiways to Runway 12-30 and five connecting taxiways to Runway 8-26. All are at least 35 feet wide as required for Design Group II aircraft operations. According to FAA standards, existing taxiways including widths and separations are adequate to accommodate demand through the planning period.

4.2.3 Aircraft Parking Apron

Similar to the previous taxiway discussion, aircraft parking to runway and taxiway separation distances at Safford are also in compliance with FAA standards. Further, the existing aircraft parking apron capacity is adequate to meet demand during the planning period. The aircraft apron area serves transient aircraft, based aircraft, helicopter parking overflow, and air cargo staging. Transient aircraft spaces are based on peaking characteristics identified in the previous chapter with additional spaces for periods of parking demand overlap. Based aircraft not stored in hangars also require apron area. Appendix E includes the detailed calculation that outlines the apron demand for 1997 and 2020 conditions. Apron parking needs for each phase are summarized in **Table 4-6**.

While the demand/capacity ratio implies that the existing aircraft parking area will only be used to 33 percent of its capacity by 2020, these figures are theoretical as they are based on the most efficient distribution of the parked aircraft. Current distribution of

aircraft apron reveals that a more practical demand/capacity ratio in the year 2020 would be closer to 60 percent. In both cases, apron area is more than adequate to accommodate ultimate demand through the planning period.

Table 4-6
Apron Area Demand/Capacity Analysis

Requirements	1997	2005	2010	2020
Transient Apron	7 spaces 3,000 s.y.	7 spaces 3000 s.y.	9 spaces 3960 s.y.	9 spaces 3960 s.y.
Based Aircraft Apron	12 spaces 3600 s.y.	12 spaces 3600 s.y.	13 spaces 3900 s.y.	14 spaces 4200 s.y.
Subtotal	19 spaces 6,600 s.y.	19 spaces 6,600 s.y.	22 spaces 7,860 s.y.	23 spaces 8,160 s.y.
Circulation (1x Reqmt)	6,600 s.y.	6,600 s.y.	7,860 s.y.	8,160 s.y.
Total Apron Reqmt	13,200 s.y.	13,200 s.y.	15,720 s.y.	16,320 s.y.
Existing Apron Area	48,800 s.y.	48,800 s.y.	48,800 s.y.	48,800 s.y.
Demand/Capacity Ratio	27%	27%	32%	33%

4.2.4 Helicopter Facilities

BLM has two private helipads adjacent to the BLM offices. Other helicopter operators are using the new helipad, constructed in July 1998, located south of the BLM helipads. The new helipad facilities serve the military, forest firefighting operations, as well as other private use operations that were previously accommodated on the runway. Designated helicopter parking at the airport is currently nonexistent. Twelve additional helicopter parking spaces are needed immediately to accommodate the current and forecast demand through the planning period. However, this development can be phased if the continued use of the apron area for overflow parking is permitted. During firefighting operations, between 12 and 15 helicopters are on the ground at one time. Military helicopters may arrive during this same period. Currently, the majority of helicopters are parked on the ramp and in the dirt. However, when dust abatement becomes a problem, Runway 8-26 is closed and used for helicopter parking. While BLM's helipads are also used for parking, this only provides two spaces. Although the

helicopter parking requirement will exceed, on occasion, the twelve recommended spaces, the additional apron area available can be used for overflow.

Once the helicopter parking facilities are completed, they will be adequate through the planning period.

4.2.5 Airfield Pavement

Airfield pavement (including runways, taxiways, and aircraft aprons) is measured by its ability to accommodate the load of specific aircraft types at a design volume of traffic as well as by its condition. A Pavement Maintenance Management Program Report, dated July 1997, was prepared for the Safford Regional Airport. This report summarized the pavement inventory data collected for the airport. The following summarizes the current pavement strengths for the airfield:

- Runway 12-30: 30,000 lbs. SWL
- Runway 8-26: 23,000 lbs. SWL
- Taxiways A, B, and D: 30,000 lbs. SWL
- Taxiway C: 23,000 lbs. SWL
- Terminal Apron: 15,000 lbs. SWL
- Helipad (Heavy Helicopter): 42,000 lbs.
- Helipad Taxiway: 12,500 lbs. SWL

Based on aircraft projected to operate at Safford through 2020, all pavement strengths are adequate. Beyond 2020, the terminal apron should provide an area to accommodate large aircraft up to 30,000 lbs. such as a Cessna Citation III (max takeoff 22,000 lbs). The current pavement strength currently accommodates regular use by King Airs and Beech 1900's weighing less than 15,000 lbs. SWL as well as occasional use by larger aircraft.

The airport's most recent pavement preservation projects (1998-99) provided microsurface and coal tar treatments to the airfield pavements. These treatments should last five to seven years. It is recommended that future pavement preservation projects be included in the airport's CIP every five years.

4.2.6 Navigation Aids, Visual Aids, Marking, and Signage

A global positioning system (GPS) instrument approach has been published for both Runways 12 and 30. These approaches, published October 8, 1998, are the first instrument approaches published for Safford. As a result, Runway 12-30 is currently being re-marked as part of the 1999 pavement preservation project. Runway 8-26's basic visual markings should be maintained through the planning period.

The MIRL and MITL systems described in the Inventory Chapter for the runways and taxiways, are operational, but outdated. These pilot-controlled, variable intensity, systems are currently direct-buried and should be replaced with conduit.

PAPI and VASI systems provide pilots with vertical guidance on approach. Runway 12-30's VASI system and Runway 8-26's PAPI system are outdated and not working properly and, therefore, should be replaced with more modern PAPI systems.

The existing airfield signage is antiquated and not current per FAA standards. Signage should be replaced/upgraded.

It is also important to note that signage outside the airport boundary which provides guidance to the airport is inadequate. The City of Safford should consider improving the type, location, and number of directional signs to the airport.

4.2.7 Airspace

Based on projected aviation activity and airport configuration, no airspace conflicts with other facilities will be encountered. Current military operating areas (MOAs) will not impact Safford Regional Airport operations (see Chapter 2, Inventory, for additional airspace details).

Airspace in the vicinity of an airport should be clear and free of obstructions which can be hazardous to aircraft. All future airport improvement projects should ensure that airspace surfaces are not penetrated.

4.3 LANDSIDE FACILITIES

Landside facilities consist of the terminal building, aircraft storage (hangars), surface access, vehicle parking, and aviation support facilities. Here, a brief summary of the landside capacity analysis and facility requirements are presented with a detailed discussion following.

- Existing terminal building of 1,100 square feet is inadequate. A Terminal Building Concept Study/Design is currently programmed. Preliminary terminal requirements have been estimated at 2,640 square feet.
- Additional aircraft storage will be required to accommodate approximately nine additional based aircraft. Other based aircraft will park on the apron. Note: hangars in poor condition (i.e. FBO hangar) may require replacement within the 20-year planning period. It is assumed that such replacement of hangars will occur on the same lot where they are currently located – such development is separate from the additional nine hangars required to accommodate growth.
- The airport access road should be relocated beyond the new helicopter operations area. Terminal area vehicle parking is adequate through the planning period for GA operations. However, based aircraft owner parking should continue to be provided adjacent to hangar development areas in conjunction with hangar construction.
- Existing FBO hangar facilities are in poor condition and inadequate in size. A new facility is required (also addressed under aircraft storage).
- Utility improvements at the airport are adequate in the short-term with the exception of water. More specific improvements may evolve based on future tenants.
- Fuel storage for 100 LL and Jet A is adequate.
- Security fencing around the airport is currently adequate.

4.3.1 Terminal Building

The airport's existing terminal building contains 1,100 square feet. While this size may be adequate for many GA airports, airport-related staff have expressed the need for additional space. This need is based on its current and projected use in the future. The existing terminal building currently accommodates FBO office space, a pilot lounge/waiting room and restrooms. The airport has expressed interest in continuing efforts to provide a larger terminal facility, also identified in the previous master plan,

that will accommodate a meeting room, expanded office space, and a larger pilot lounge/waiting room. A terminal building with 2,640 square feet (similar to the previous master plan) is identified for ultimate development, but a Terminal Building Concept Study/Design is currently programmed to address this issue in more detail and may result in revised space requirements. Preliminary requirements are based on a pilot/passenger lobby area with 800 s.f., administrative/office space of 340 s.f., restroom facilities totaling 300 s.f., utility and equipment storage room with 400 s.f.; and a conference room with 800 s.f. for a total terminal building square footage of 2,640.

4.3.2 Aircraft Storage

There are currently 16 of the 28 based aircraft in hangars at the airport. It is estimated that of the 39 based aircraft forecast for 2020, 25 aircraft (64%) will require hangar space. This translates to nine additional hangar space requirements by the year 2020 – six in Phase I (2005), one in Phase II (2010), and two in Phase III (2020). This phasing is tied to the based aircraft forecast in the previous chapter. Hangar demand can be accommodated by conventional and/or t-hangar units. However, for planning purposes, it is assumed that the area required for each based aircraft will range from 1,200 to 1,500 square feet. This translates to approximately 13,500 square feet of total hangar space needed during the planning period. Approximately 9,000 square feet (6 hangars) are needed in Phase I. The FBO hangar (rated as "poor condition" in the Inventory Chapter) will require replacement. However, the FBO hangar replacement facility, can be constructed in the same lot where the FBO currently resides. Additional discussion of FBO facilities is provided in a later section.

4.3.3 Surface Access and Vehicle Parking

The airport is served by one paved access road into the airport. Although this road, with improvements, could serve the future needs of the airport, it is recommended that the road be relocated south of the new helicopter operations area as a safety measure to avoid vehicle and helicopter traffic conflicts in the future as activity levels for both increase.

The terminal parking area has 30 general public parking spaces, four employee spaces, and two handicapped spaces. Terminal area vehicle parking demand is estimated at a

total of 20 parking spaces by the year 2020 (17 by 2005, 18 by 2010). Therefore, existing vehicle parking in the terminal area is adequate through the planning period.

Many based aircraft owners currently park in unmarked areas in the existing hangar development area. It is anticipated that, for the size of Safford's based aircraft and operational levels, that this practice will continue. Thus, future hangar development (nine hangars) should accommodate this need.

4.3.4 Aviation Support Facilities

Aviation support facilities include FBO facilities, fuel storage, airport maintenance facilities, aircraft rescue and firefighting facilities (ARFF), security facilities, and utilities. Drainage requirements are also addressed for the airport and are published in a separate report. However, a summary of the conclusions and recommendations are included in this chapter.

FBO Facilities

Current FBO facilities are inadequate to meet projected demand. The existing FBO hangar is 4,800 square feet and does not meet the FBO's current space requirements. In addition, the hangar is in poor condition and requires replacement. While the proposed terminal building expansion project would accommodate additional administrative space that could be used by the FBO, additional space is needed for FBO services to include aircraft storage/maintenance.

A preliminary FBO hangar needs analysis, previously prepared in February 1998 by the airport in coordination with the FBO, identified a hangar totaling 7,500 square feet. This concept is under internal airport review. This facility would include approximately 90 percent of the space for three to four aircraft in the hangars for maintenance and the remaining 10 percent for administrative and equipment storage space. Currently, the FBO's facility cannot accommodate all aircraft necessary at one time based on wingspan and tail height.

Utilities

Utilities at the airport include water, electric, septic, propane, and telephone. While some hangar facilities do not have utilities, the terminal building does have access to all

utilities. Generally, utility systems at the airport are adequate in the short-term, with the exception of water, based on existing facilities served. However, it is recommended that the airport make utility infrastructure improvements in conjunction with future airport improvements as the specific needs evolve from future airport tenants and users. Further, specific utilities available to hangar tenants may be driven by cost since utilities are not typically eligible for federal and state funding (See Chapter 9, Implementation, for more information).

Water

The City water line has inadequate pressure to provide fire protection as well as serve the ultimate needs of the airport. The existing waterline is operated by a booster pump that was rebuilt in 1999. The line from the booster pump (currently serving only the airport) is approximately 6,000 feet long. It is estimated that no more than 200 gallons per minute through the existing line can be provided. The existing line must be replaced. In addition, the Utility Department has been planning a large water storage tank for the airport. This storage tank will not provide pressure. While ARFF trucks can meet initial emergency needs, water resupply and pressure needs cannot be met with the existing infrastructure. Therefore, utility improvements should be programmed during the planning period to accommodate these needs.

Electric

The existing power line to the airport is fed by a Graham County Electrical Corporation transmission line and transformers with limited capacity. While the transformers at the airport power line connection will need upgrading to carry more than 150 KVA, the increase in aviation demand and associated facilities are not expected to significantly increase power requirements. Therefore, an upgrade to the power system is not required during the planning period. The existing power system can handle limited expansion. The appropriate capacity of the existing power line serving the airport is 2100 KVA.

Septic

Although the existing septic systems are functioning, the existing septic system for the terminal has limited capacity. The soils at the airport consist of significant clay with severe limitations for use related to a septic tank filter field. The existing systems are

not failing, but it is important to note that the existing soils provide poor suitability for septic systems. Heavy use of a septic system could cause problems. While the total aviation activity demand is not anticipated to overload the existing septic system, the City should plan for septic system needs beyond the 20-year planning period.

Propane

Heating fuel is provided by onsite propane storage tanks. These tanks will continue to serve the needs of existing and future demand at the airport.

Telephone

Telephone service is provided by U.S. West. It is anticipated that the existing telephone wiring system is more than adequate to accommodate future airport development needs.

Fuel Storage

Two new aboveground fuel storage tanks (1998) have been installed to replace the underground tanks discussed in the previous master plan. These tanks, which store 10,000 gallons of 100LL and 12,000 gallons of Jet A, are more than adequate to meet the weekly fuel storage requirements through the planning period. This is based on the assumption that average fuel consumption per operation for 100 LL and Jet A will not exceed 26 gallons and 31 gallons, respectively, in any average week.

Current estimates for Safford indicate that consumption averages 5.4 gallons per operation for all aircraft activity. This is based solely on a ratio between total estimated 1997 annual operations and fuel sales. The FBO has not encountered fuel storage shortages in the past.

The airport recently acquired two additional fuel trucks for a total of three: two with 100LL and one with Jet A fuel. These fueling vehicles are currently parked under a new truck shade (constructed in 1999) adjacent to the FBO hangar. No additional storage is required.

Maintenance

The City of Safford as well as the FBO, through an agreement with the Airport Authority, provide airport maintenance. While most maintenance equipment comes from the City fleet, some equipment is stored at the airport. However, airport staff have indicated that outside equipment storage/staging adjacent to the FBO is adequate and the proposed new FBO facility will provide some additional storage when completed.

Aircraft Rescue and Firefighting Facilities (ARFF) and Security

As detailed in the Inventory Chapter, the City of Safford provides both firefighting support (approximately 28 volunteers) and airport security (approximately 15 City of Safford police officers). Based on the type of operations at Safford Regional Airport, an ARFF facility is not required. Further, firefighting equipment staging at the airport is not necessary. However, water pressure is currently inadequate to provide proper firefighting capability on the airport (beyond the City's equipment capabilities) and should be remedied.

Security fencing currently exists for the perimeter of the airport. No additional fencing is required. Double-barbed wire runs along the north and east side of the airport while chainlink fencing lies generally along the west and south side of the airport. The City's police department provides security surveillance at the airport on an as-needed basis.

Air Traffic Control Tower (ATCT)

As mentioned in the Inventory Chapter, Safford does not have an air traffic control tower (ATCT). Air Traffic can be handled by establishing a control tower on a contract basis (private) or an FAA-operated ATCT. In most cases, general aviation airports establish an ATCT operated by the FAA due to cost and staffing. The FAA has established criteria for qualifying for a FAA-operated ATCT. According to the Airways Planning Standard Number 1 (APS-1) standard, an airport is eligible for a tower when annual operations reach 200,000. The 2020 forecast of 19,700 annual operations is well below this threshold. Therefore, an FAA operated control tower is not proposed during the planning period.

Drainage

According to the April 1999 Drainage Analysis Report, the Safford Regional Airport drainage layout can safely convey on-site and off-site flows for the five-year storm event per the FAA criteria through and around the airport. Based on the drainage report for the apron reconstruction, the airport aerial photo, and field visit, no flooding problems or excessive ponding at the catch basins or culvert inlets are evident. In the event of a storm greater than a five-year event, there are potential flooding problems due to the ends of the culverts and catch basin grates becoming clogged with debris and sediment, and excessive vegetation in the channels. It is recommended that the current drainage system continually be maintained by cleaning all debris, vegetation, and sediment from catch basin grates, inlets and outlets of culverts and drainage channels. In addition, all damaged culverts should be repaired in conjunction with future improvements.

4.4 SUMMARY

Table 4-7 summarizes the airside and landside facility requirements identified in this chapter. Additional information regarding these necessary improvements is outlined in Chapter 5, Alternatives Analysis, and Chapter 9, Implementation.

Table 4-7
Summary of Facility Requirements

Airside Facilities	
Runways	Acquire remaining parts of Runway 12-30 RPZs, Runway 8-26 OFA, and large parcels adjacent to the west and south boundaries of the airport to protect for City–proposed development beyond 2020
Taxiways	Relocate Taxiway D. Construct Taxiway E and associated taxilanes for hangar area development.
Apron Area	No additional development required.
Helicopter Operations Area	Construct 12 helicopter parking spaces (short-term need).
Pavement	Continue pavement preservation projects (ongoing).
Navaids, Visual Aids, Markings, Signage	Replace PAPIs/VASIs on both runways with new PAPIs. Upgrade airfield signage and lighting.
Airport Landside Facilities	
Terminal	Expand existing or construct new terminal building with approximately 2,640 s.f. following Terminal Building Study/Design already programmed (short-term need).
Hangars	Construct 6 additional hangars in Phase I; 1 in Phase II, and 2 in Phase III. Replace old FBO hangar with new facility to meet space requirements (short-term need).
Surface Access & Parking	Relocate airport access road. Terminal area parking is adequate. Based aircraft owner parking should be provided adjacent to and in conjunction with hangar development.
Aviation Support Facilities	
Fueling	No additional development required.
ARFF and Security	No additional development required.
Utilities	Water line and storage improvements required. Specifics on other necessary improvements may evolve based on future airport tenants.